

A NEW SERIES, *INCOGNITAE*, OF *EUCALYPTUS* L'HÉR., INCLUDING A NEW SPECIES ENDEMIC TO FLEURIEU PENINSULA AND KANGAROO ISLAND, SOUTH AUSTRALIA

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Abstract

A new series, *Incognitae*, is described. It comprises *Eucalyptus longifolia*, *E. cosmophylla* and a newly described species, *E. paludicola* D. Nicolle, a small tree of restricted distribution on central and southern Fleurieu Peninsula and south western Kangaroo Island. A key is provided for the three species of ser. *Incognitae*.

Introduction

Eucalyptus paludicola was first brought to my attention by M.I.H. Brooker of the Australian National Herbarium from a herbarium specimen (*A.G. Spooner 5206*) seen in CANB under the name *E. ovata*. The population from which this and most other specimens currently in herbaria were taken occurs in Cox's Scrub Conservation Park. Following further field surveys, more populations were found. It became apparent that this was a new and distinct taxon. It is easily distinguished from *E. cosmophylla* in the field by its erect tree habit, predominantly seven-flowered inflorescences, and occurrence in swampy habitat. A new series is erected to accommodate this new species and two other species previously included in ser. *Lepidotae* – *Fimbriatae* Maiden.

Eucalyptus ser. *Incognitae* D. Nicolle, ser. nov.

Arbores vel frutices "mallees". Cortex fibrosa, brunnea vel cinerea, per laevis granularis, cremea vel cinerea. Cotyledones bilobae. Folia juvenilia petiolata, remanentia opposita per nodis paucis, turn alternantia, late lanceolata ad orbicularia, hebetia, discoloria. Folia adulta hebetia vel nitentia, concoloria, reticulo moderato vel denso, glandulis paucis. Inflorescentiae axillares, 3 vel 7 floribus. Filamenta staminum inflexa, anthera versatiles, dehiscentes rimis longitudinalibus. Fructus obconici, cylindrici vel cupulares, valvis inclusis ad rimum. Ovula verticaliter 4 vel 8-seriata. Semina nigra, nitentia, aliquantum pyramidalia.

Typus: Eucalyptus cosmophylla F. Muell.

Small to tall trees or mallees. Bark brown to grey, rough over part or all of the stems or smooth, granular, cream to grey bark. Cotyledons bilobed. Juvenile leaves petiolate, opposite, becoming alternate by the sixth pair, dull, strongly discolorous, broad-lanceolate to orbicular. Adult leaves dull to glossy, concolorous, reticulation moderate to dense, oil glands sparse. Inflorescences axillary, 3 or 7 flowered. Staminal filaments inflexed, anthers versatile, opening by longitudinal slits. Mature fruit cylindrical to cupular or somewhat obconical, valves to rim-level. Ovules in 4–8 vertical rows. Seed black, glossy, somewhat pyramidal.

Etymology

The epithet is derived from Latin *incognitus* (with identity concealed), referring to the fact that until now the series was included with the cognate *E. ser. Lepidotae* – *Fimbriatae* (grey gums).



Fig. 1. *E. paludicola* (D. Nicolle 95). A, flowering branch; B, juvenile leaf (D. Nicolle 99); C, adult leaf; D, inflorescences; E, buds in side view; F, bud in longitudinal section; G, flower with stamens removed as seen from above; H, flower; I, style; J, stamens; K, fruits; L, fruit in longitudinal section; M, seeds.

Notes

Series *Incognitae* differs from series *Lepidotae* – *Fimbriatae* Maiden in which it was previously included by the less colourful, smooth bark (often shades of coppery and orange in ser. *Lepidotae* – *Fimbriatae*), broad-lanceolate to orbicular juvenile leaves (narrow lanceolate to lanceolate in ser. *Lepidotae* – *Fimbriatae*), concolorous adult leaves (strongly discolorous in ser. *Lepidotae* – *Fimbriatae*), sparsely distributed oil glands in adult leaves (more numerous in ser. *Lepidotae* – *Fimbriatae*), valves only to rim level (exserted in ser. *Lepidotae* – *Fimbriatae*) and consistently black seed (brown or black seed in ser. *Lepidotae* – *Fimbriatae*).

The *E.* series *Incognitae* occurs in South Australia and New South Wales, possibly extending into Victoria while the *Lepidotae* – *Fimbriatae* are restricted to Queensland and New South Wales.

***Eucalyptus paludicola* D. Nicolle, sp. nov.**

Arbor parva ad 10 m alta. *Eucalypto cosmophyllae* F. Muell. affinis, a qua habitu arboreo, cortice persistenti fibroso ad basin (ad 3m). Umbellastrae 7-florae, alabastris fructibusque parvis, cylindricis vel obconicis, pedunculis longis, habitatione paludosa differt.

Typus: 7.5 km from Mount Compass towards Nangkita opposite "Sunnyside" 35°22'S, 138°40'E, D. Nicolle 95, 10.x.1992 (holo.: AD; iso.: CANB).

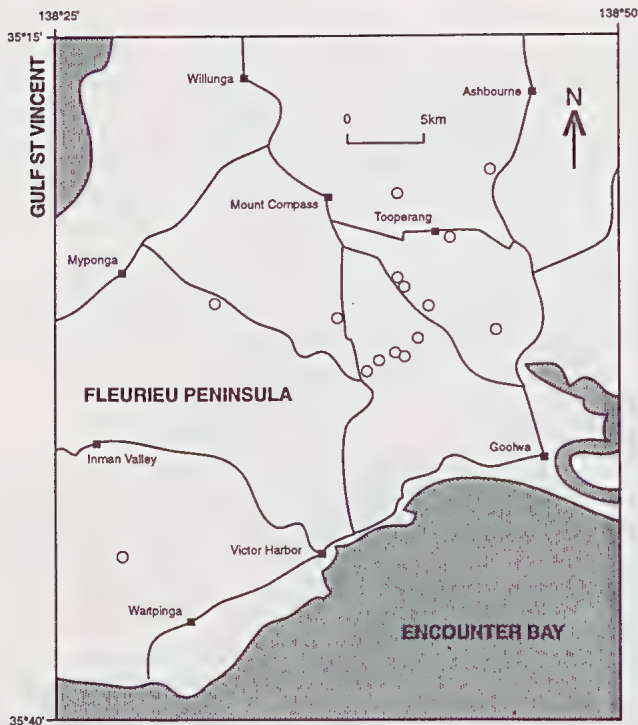
Small tree 4–10 m tall, trunk usually erect, sometimes multi-stemmed. *Bark* dark brown, rough, thick and coarsely fibrous on the trunk up to 3 m high then smooth grey over light grey and cream. *Cotyledons* bilobed; *juvenile leaves* petiolate, opposite, becoming alternate by sixth pair, elliptical to orbicular, up to 100 × 70 mm, discolorous, dull, dark green above, paler green below. *Adult leaves* alternate, broad-lanceolate to lanceolate, sometimes falcate, up to 210 × 40 mm, dull at first, becoming slightly glossy, concolorous, dark green to bluish green. *Reticulation* dense with sparse, intersectional oil glands. *Inflorescences* axillary, unbranched, predominantly (3) 7-flowered, peduncles angular to slightly flattened, 7–15 mm long, pedicels to 5 mm long. *Mature buds* creamy white in colour, hypanthium obconical. *Operculum* same width as hypanthium, shortly conical to hemispherical, apiculate. *Stamens* inflexed, all fertile; filaments creamy white. *Ovules* in (4) 6 (8) rows. *Mature fruit* subsessile to pedicellate, cylindrical to obconical or slightly campanulate, smooth, up to 14 × 12 mm. *Operculum scar* vertically ascending, conspicuous, 0.5–2 mm wide, disc level to descending, valves (3) 4 (5), to rim level. *Seed* black, somewhat pyramidal. Figs 1–3.

Etymology

The epithet is derived from the Latin *paludis* (marsh) and *cola* (dweller) and refers to its common habitat in swampy and seasonally inundated low lying areas.

Selected specimens

SOUTH AUSTRALIA. SOUTHERN LOFTY (north to south): 200 m in from main road on south edge of Cox's Scrub, 35°21'S, 138°44'E, D. Nicolle 69, 20.vi.1992 (AD, CANB); south side of Cox's Scrub, 200 m north west of Bonds Road in creek, 35°21'S, 138°44'E, D. Nicolle 94, 10.x.1992 (AD); Cox's Scrub, south Mount Lofty Ranges, 35°21'S, 138°44'E, B.C. Crisp 57, 13.xii.1970 (AD); Cox's Scrub Conservation Park, 35°21'S, 138°44'E, A.G. Spooner 5206, 21.v.1977 (AD); on north slope of Bottom Creek Farm, Tooperang, 35°23'S, 138°41'E, C.M. Eardley, 8.ix.1946 (AD); 300 m from Mount Compass to Goolwa Road on Kokoda Road then 200 m east of road in valley, 35°25'S, 138°43'E, D. Nicolle 101, 31.x.1992 (AD); 400 m from Mount Compass to Victor Harbor Road on Mosquito Hill Road, 35°27'S, 138°38'E, D. Nicolle 98, 17.x.1992 (AD); valley north of Fraser Road and Victor Harbor to Cape Jervis Road intersection, 35°35'S, 138°28'E, D. Nicolle 349 & M.I.H. Brooker, 28.xii.1992 (AD, CANB).



Map 1. Distribution of *Eucalyptus paludicola* (O) on Fleurieu Peninsula

the Mount Lofty Ranges watershed where streams flow easterly or southerly into the Murray River Lakes or Southern Ocean, not westerly to the Gulf St. Vincent where *E. camaldulensis* is the dominant tree of the creeks and low-lying areas. Associated species include *E. baxteri*, *E. cosmophylla*, *E. fasciculosa*, *E. leucoxydon* ssp. *leucoxydon*, *E. odorata* and *E. ovata*. *E. paludicola* is the only tree species present on some sites. More recently it has been discovered at one site in Kelly Hill Conservation Park on Kangaroo Island where it is associated with *E. cosmophylla* and *E. leucoxydon*. Map 1.

Flowering period: September to November.

Notes and affinities

E. paludicola is distinguished from *E. cosmophylla* in the field by its predominantly seven-flowered inflorescences (three-flowered in *E. cosmophylla*), erect tree habit, longer pedicels and peduncles, more cylindrical smaller buds and fruits without prominent ridges (cup-shaped fruit with two opposite ridges in *E. cosmophylla*), thinner adult and juvenile leaves, thick rough bark on mature trees and swampy habitat. In the past, herbarium specimens of *E. paludicola* have been identified as unusual forms of *E. ovata* vars. *ovata* or *grandiflora*, presumably because of its swampy habitat and tree form, or *E. cosmophylla* to which it is more similar morphologically. The new species is intermediate in some respects between *E. cosmophylla* and *E. ovata*, such as habitat and seed characteristics. However, recent hybridism is considered unlikely as all populations show only minor variation in the seedlings and mature material, and *E. ovata* and *E. cosmophylla* co-occur at only a few of the known populations of *E. paludicola*. There are no sightings or collections of any

Distribution and habitat

E. paludicola occurs from near Watpinga on southern Fleurieu Peninsula, north to east of Myponga and east towards Currency Creek and Ashbourne over a linear range of about 50 km. It is common in the area south of Tooperang and co-dominates some creek lines with *E. ovata*. *E. paludicola* always occurs in small, usually pure stands of between 10 and 100 plants surrounded by heath or low forest vegetation. The stands occur in low depressions, broad gullies or occasionally on hillsides near permanent creeks. The soils are sands and loams often with a high percentage of organic matter in the soil, but are waterlogged in winter with some populations having water up to 30 cm deep around the stems for three months in the 1992 winter. *E. paludicola* grows only on the eastern and southern side of



Fig. 2. Habit of *E. paludicola* (D. Nicolle 101).

intergrades or hybridism between *E. paludicola* and any other taxon. *E. paludicola* flowers prolifically and is conspicuous when in flower. It has potential as an ornamental tree and for reclaiming poorly drained areas where few other eucalyptus will survive.

Conservation status

E. paludicola is known from about 15 populations over a range of about 50 km. Most populations occur in roadside vegetation or private farmland and are in danger of accidental destruction or damage from road works. One population occurs on the boundary of Cox’s Scrub Conservation Park (mostly within the reserve), and one population just outside the boundary of Scott Conservation Reserve. The Cox’s Scrub population suffered from bush fire in 1983. The trees recovered by the epicormic shoots on the lower half of the stem. Some seedlings of *E. paludicola* also grew as a result of the fire and are now reproductively mature. The entire Kangaroo Island population is conserved in a remote part of Kelly Hill Conservation Park. The status code 3vci is suggested, using criteria of Briggs & Leigh (1988).

Key to Taxa in series *Incognitae*

- 1. Buds and fruit pendulous..... *E. longifolia*
- 1 Buds and fruit erect.
- 2. Inflorescence predominantly three-flowered..... *E. cosmophylla*
- 2 Inflorescence predominantly seven-flowered *E. paludicola*



Fig. 3. Bark on lower trunk (*D. Nicolle 101*).

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References

- Briggs, J.D. & Leigh, J.H. (1989). "Rare or Threatened Australian Plants 1988. Revised Edition". Special Publication No. 14. (Australian National Parks & Wildlife Service: Canberra).
- Lang, P.J. & Brooker, M.I.H. (1990). Two new mallee species from South Australia in *Eucalyptus* L'Hér. series *Rufispermae* Maiden. *J. Adelaide Bot. Gard.* 13: 65–78.
- Maiden, J.H. (1925). "A Critical Revision of the genus *Eucalyptus*" 7: 152. (Govt Printer: Sydney).